

STIC Search Report Biotech-Chem Library

STIC Database Transmis Number 1

TO: Nita M Minnifield

Location: Rem-3C01&3C18

Art Unit: 1645

Wednesday, April 27, 2005

Case Serial Number: 09/508967

From: Toby Port

Location: Biotech-Chem Library

REM1-A59

Phone: 272-2523

toby.port@uspto.gov

Searon Noises

Dear Examiner Minnifield,

Here are the results of your search.

Please feel free to contact me if you have any questions.

Toby Port

Reviewed 5/5/05 MM



STIC-Biotech/ChemLib

From: Sent:

Chan, Christina

Tuesday, April 26, 2005 2:09 PM Minnifield, Nita; STIC-Biotech/ChemLib

To: Subject:

RE: rush sequence search

Please rush. Thanks Chris

Chris Chan TC 1600 New Hire Training Coordinator and SPE 1644 (571)-272-0841 Remsen, 3E89

----Original Message-----

Minnifield, Nita

Sent:

Tuesday, April 26, 2005 7:10 AM

To: Subject:

Chan, Christina rush sequence search

Christina, please approve, 2 month amdt.

STIC

09/508967

Please do a commercial and interference sequence search on SEQ ID NO: 1 of the above application.

Please search aa 1-415 of SEQ ID NO: 1 and aa 79-415 of SEQ ID NO: 1.

> SPDI: Oligomer:

Text: Litigation:_

Please provide a paper copy of the results.

Thanks, Minnifield 71976

*******	*********
STAFF USE ONLY	Type of Search
Searcher:	NA#: AA#:_
Searcher Phone: 2-	Interference: SP
Date Searcher Picked up:	S/L:Oligomer:
Date Completed:	Encode/Transl:
Searcher Prep/Rev. Time:	Structure#: Te
Online Time:	Inventor: Litigation

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endors and cost where applicable
STN:
DIALOG:
QUESTEL/ORBIT:
LEXIS/NEXIS:
SEQUENCE SYSTEM:
WWW/Internet:
Other(Specify):

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3: /cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep:*
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Copyright (c) 1993 - 2005 Compugen Ltd.
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RESULT 1 US-10-153-273-12

Sequence 12, Application Publication No. US20020 GENERAL INFORMATION:

Application US/10153273 No. US20020169305A1

Ation No.

3RAL INFORMATION:
APPLICANT: Sim, Kim L.
Chitnis, Chetan
Miller, Louis H.
""On, David S.

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COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Ver
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/10/153,273
FILING DATE: 21-May-2002
CLASSIFICATION: CONKNOWN>
PRIOR APPLICATION DATA:
                                                  APPLICATION NUMBER: US/09/210,288 FILING DATE: <Unknown>
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                   CORRESPONDENCE ADDRESS:
ADDRESSEE: Knobbe Martens Olson & Bear
STREET: 620 Newport Center Drive 16th Floor
CITY: Newport Beach
STATE: California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Wellems, Thomas E.
TITLE OF INVENTION: BINDING DOMAINS FROM PLASMODIUM VIVAX
AND PLASMODIUM FALCIPARUM ERYTHROCYTE BINDING PROTEINS
NAME: Fuller, Michael
REGISTRATION NUMBER: 36,516
                                                                                                                                                                                                                                                                                                                                                                                      ZIP: 92660
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US-08-268-29A-4
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	311	291	291	291	778	778	197	197	277	277	277	282	282	282	411	411	411	1115
	N	w	N	N	δ	σ	9	9	w	N	N	w	N	N	ω	N	N	σ
	US-08-568-459A-21	US-09-210-288-13	US-08-487-826B-25	US-08-568-459A-13	5198347-4	5198347-4	5198347-2	5198347-2	US-09-210-288-15	US-08-487-826B-27	US-08-568-459A-15	US-09-210-288-16	US-08-487-826B-28	US-08-568-459A-16	US-09-210-288-20	US-08-487-826B-32	US-08-568-459A-20	5198347-6
•	21,	13,	•	Sequence 13, Appl	Patent No. 5198347	Patent No. 5198347	No.	. 519	15,	Sequence 27, Appl	15,	16,	•	Sequence 16, Appl	Sequence 20, Appl	•	Sequence 20, Appl	Patent No. 5198347
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#### ; TOPOLOGY: linear ; MOLECULE TYPE: protein ; HYPOTHETICAL: NO ; ANTI-SENSE: NO ; FRAGMENT TYPE: N-termina US-08-487-826B-16 RESULT 1 US-08-487-826B-16 COMPUTER READABLE FORM: MEDIUM TYPE: Ploppy disk COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, Version #1 CURRENT APPLICATION DATA: APPLICATION NUMBER: US/08/487,826B FILING DATE: 10-SEP-193 CLASSIFICATION: 435 ATTORNEY/AGENT INFORMATION: NAME: Israelsen, Ned REGISTRATION NUMBER: 29,655 GENERAL INFORMATION: APPLICANT: Sim, Ki APPLICANT: Chitnis APPLICANT: Miller, Sequence 16, Application US/08487826B Patent No. 5993827 TELEFAX: (619) 235-01 INFORMATION FOR SEQ ID NO: APPLICANT: Sim, Kim L. APPLICANT: Chitnis, Chetan APPLICANT: Miller, Louis H. APPLICANT: Peterson, David S. APPLICANT: Su, Xin-zhaun APPLICANT: Wellems, Thomas E. APPLICANT: Wellems, Thomas E. SEQUENCE CHARACTERISTICS: LENGTH: 2182 amino acids REFERENCE/DOCKET NUMBER: NI TELECOMMUNICATION INFORMATION: TELEPHONE: (619) 235-850 CORRESPONDENCE ADDRESS: ADDRESSEE: Knobbe Martens Olson & Bear STREET: 620 Newport Center Drive 16th Floor CITY: Newport Beach STATE: California TITLE OF INVENTION: BINDING DOMAINS FROM PLASMODIUM VIVAX TITLE OF INVENTION: AND PLASMODIUM FALCIPARUM ERYTHROCYTE NUMBER OF SEQUENCES: TYPE: amino acid STRANDEDNESS: sil COUNTRY: 92660 S N-terminal single NIH121.001CP1 BINDING PROTEINS

47.48;

Score 892.5;

DB 2;

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Ś 밁 S 밁 ş S 밁 밁 S 맑 S R;Chen, Q.; Barragan, A.; Fernandez, V.; Sundstrom, A.; Schlichtherle, M.; Sahlen, A.; J. Exp. Med. 187, 15-23, 1998
A;Title: Identification of Plasmodium falciparum erythrocyte membrane protein 1 (PfEMP1 A;Reference number: Z17860; MUID:98080592; PMID:9419207 variant-specific surface protein 1 - malaria parasite (Plasmodium falciparu N;Alternate names: erythrocyte membrane binding protein 1 (EMP1) C;Species: Plasmodium falciparum C;Species: Plasmodium falciparum C;Date: 20-Sep-1999 #sequence_revision 20-Sep-1999 #text_change 09-Jul-2004 A; Molecule type: mRNA A; Residues: 1-2228 < CHE> A; Status: preliminary; translated from GB/EMBL/DDBJ A; Reference number: A; Accession: T14029 C; Accession: Query Match 99.6 Best Local Similarity 99.7 Matches 336; Conservative Cross-references: UNIPROT:060991; EMBL:AF003473; NID:g2961467; PID:g2961468; PIDN:AAC FCR3S1.2-var1 379 301 319 241 259 181 199 121 139 13 79 KGKVRMGKGCTDCFFACGSYENWIDNQRKQFDKQKKY 337 PCKKDGKGNDVDRFSVKEQAGYDNKKMKCSNGMTCAPFRRLHLCNKNFPNMNSNDSSKAK 60 TYFDYVPQYLRWFEBWAEDFCRKKKKKLENLEKQCRGKDKSDEYRYCSRNGYDCBQTISR TVWGAMTCSKELDNSSYFRATCNDTGQGPSQTHNKCRCDXDKGANAGKPKAGDGDVTIVP KKKKONGKETEREKLEOKLKEIFKKIHDNIKOKEAOKRYNGDEDPNFYKLREDWWTANRE HDLLAEVCMAAKYEGESIKTHYPKYDSKYPGSDPPMCTMLARSPADIGDIIRGRDLYLGN HDLLAEVCMAAKYEGESIKTHYPKYDSKYPGSDPPMCTMLARSPADIGDIIRGRDLYLGN 120 TYPDYVPQYLRWFEEWAEDFCRKKKKKLENLEKQCRGKDKSDEYRYCSRNGYDCBQTISR TVWGAMTCSKELDNSSYFRATCNDTGQGPSQTHNKCRCDKDKGANAGKPKAGDGDVTIVP KKKKONGKETEREKLEOKLKE I FKK I HONLKOKEAOKRYNGDEDPNFYKLREDWWTANRE 99.6%; 0 Score 1876; DB 2; Pred. No. 4.2e-124; 0; Mismatches 1; Length 2228; Indels <u>,</u> falciparum) 378 300 180 318 240 258 198

RESULT 2 B71600

variant-specific surface protein 1 homolog PFB1055c - malaria parasite (Plasmodium falc. N;Alternate names: erythrocyte membrane binding protein 1 (EMP1)

GenCore version 5.1.6 Copyright (c) 1993 - 2005 Compugen Ltd.

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#### ALIGNMENTS

RESULT 1 AAW93944 Erythrocyte membrane protein; EMP; PfEMP1; malaria; antiocclusional; glycosamino-glycan-like moiety; antiaggregational; antimalarial; antigen receptor; infected erythrocyte; rosette formation; blood cell; capillary occlusion; cerebral malaria; treatment; vaccine; detection; AAW93944 standard; protein; 2228 AA. WO9915557-A1. P. falciparum PfEMP1 protein. 30-JUN-1999 (first entry) AAW93944; 01-APR-1999 Plasmodium falciparum. medicament; parasite;

18-SEP-1998; 98WO-SE001675

19-SEP-1997; 97SE-00003386.

(KARO-) KAROLINSKA INNOVATIONS AB

Wahlgren M, Barragan Þ Carlson J, Qijun C, Fernandez

New isolated malaria polypeptides.

Claim 4; Page 67-74; 80pp; English.

This invention describes a novel Plasmodium falciparum erythrocyte membrane protein (EMP), PfEMP1, which is capable of binding to a carobhydrate which exhibits at least one negatively charged glycosamino-glycan (GAG)-like moiety and has antiaggregational, antiocclusional and antimalarial activity. The carbohydrates of the invention are capable of acting as receptors for malaria antigens present on the surfaces of malaria infected erythrocytes, by binding to these antigens the carbohydrates prevent rosette formation by the blood cells, this prevents occlusion of capillaries as is seen in cerebral malaria caused by plasmodium falciparum. The products of the invention can be used to treat malaria or to vaccinate against it, or used to design a model to identify compounds that bind to PERMP1. The carbohydrates, polypeptides and

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Copyright (c) 1993 - 2005 Compugen Ltd
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15 US-10-293-913A-2
15 US-09-924-154-13
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US-10-153-12
US-10-15

Application US/10153273

APPLICANT:

Chitnis, Chetan Chitner, Louis H. Miller, Louis H. Peterson, David S.

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SU, XIN-ZNAUN
WELLEMS, THOMAS E.
TITLE OF INVENTION: BINDING DOMAINS FROM PLASMODIUM VIVAX
NUMBER OF SEQUENCES: 3
CORRESPONDENCE ADDRESS:
ADDRESSE: KNOBbe Martens Olson & Bear
STREET: 620 Newport Center Drive 16th Floor
CITY: Newport Beach
STATE: California
COUNTRY: US
ZIP: 92660
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER IBM PC Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
APPLICATION UMMBER: US/10/153,273
FILING DATE: 21-May-2002
CLASSIFICATION UMMBER: US/09/210,288
FILING DATE: <Unknown>
PRIOR APPLICATION UMBER: US/09/210,288
FILING DATE: <Unknown>
APPLICATION UMBER: US/09/210,288
FILING DATE: AUNICAMATION:
NAME: Puller, Michael
REGISTRATION NUMBER: 36,516
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Title:
Perfect score:
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Issued_Patents AA:*

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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

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Query Match

44.4%; Score 1010; DB 2; Length 2182;

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### ALIGNMENTS

	REFERENCE/DOCKET NUMBER: NIH121.001CP1  TELECOMMUNICATION INFORMATION:  TELEPHONE: (619) 235-8550  TELEFAX: (619) 235-0176  INFORMATION FOR SEQ ID NO: 16: SEQUENCE CHARACTERISTICS: LENGTH: 2182 amino acids  TYPE: amino acids	н
	ible ss/ms-DOS sase #1.0, Versio 08/487,826B	
DING PROTEINS	RESULT 1  US-08-487-8268-16  Sequence 16, Application US/08487826B  Patent No. 5993827  APPLICANT: Sim, Kim L.  APPLICANT: Miller, Chetan  APPLICANT: Peterson, David S.  APPLICANT: Peterson, David S.  APPLICANT: Su, Kin-Zhaun  APPLICANT: Wellems, Thomas E.  ITILE OF INVENTION: BINDING DOMAINS FROM PLASMODIUM VIVAX  TITLE OF INVENTION: BINDING DOMAINS FROM PLASMODIUM VIVAX  TITLE OF INVENTION: AND PLASMODIUM FALCIPARUM ERYTHROCYTE BINDING  NUMBER OF SEQUENCES: 45  CORRESPONDENCE ADDRESS:  ADDRESSE: Knobbe Martens Olson & Bear  STREET: 620 Newbort Center Drive 16th Floor	US-(

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문 á 멍 5 よ б Ś 밁 뭐 á S R;Chen, Q.; Barragan, A.; Fernandez, V.; Sundstrom, A.; Schlichtherle, M.; Sahlen, A.; J. Exp. Med. 187, 15-23, 1998
A;Title: Identification of Plasmodium falciparum erythrocyte membrane protein 1 (PfEMP)
A;Reference number: Z17860; MUID:98080592; PMID:9419207 variant-specific surface protein 1 - malaria parasite (plasmodium falciparum) N;Alternate names; erythrocyte membrane binding protein 1 (EMP1) C;Species; Plasmodium falciparum C;Date: 20-Sep-1999 #sequence_revision 20-Sep-1999 #text_change 09-Jul-2004 밁 A; Note: A; Molecule type: mRNA A; Residues: 1-2228 < CHE> A; Status: preliminary; translated A; Accession: T14029 C; Accession: Query Match Best Local Similarity Matches 414; Conserv ;Cross-references: Genetics: FCR3S1.2-var1 301 361 361 301 241 181 241 181 121 121 5 1 MATSGGSGGTQDEDAKHVLDEFGQKVHDEVHGEAKNYVSELKGSLSLASILGETAFTVKS EYRYCSRNGYDCEQTISRKGKVRMGKGCTDCFFACGSYENWIDNQRKQFDKQKKY 415 GANAGKPKAGDGDVTIVPTYFDYVPQYLRWFEEWAEDFCRKKKKKLENLEKQCRGKDKSD GANAGKPKAGDGDVTIVPTYFDYVPQYLRWPEEWABDFCRKKKKKLENLEKQCRGKDKSD 360 EDPNFYKLREDWWTANRETVWGAMTCGKELDNSSYFRATCNDTGQGPSQTHNKCRCDKDK LCNKNFPAMMSNDSSKAKHDLLAEVCMAAKYEGESIKTHYPKYDSKYPGSDFPMCTMLAR MQTESKYTELIEANSKRNPCKKDGKGNDVDRFSVKEQAGYDNKKMKCSNGMTCAPFRRLH EYRYCSRNGYDCEQTISRKGKVRMGKGCTDCFFACHSYENWIDNQRKQFDKQKKY EDPNFYKLREDWWTANRETVWGAMTCSKELDNSSYFRATCNDTGQGPSQTHNKCRCDKDK 300 SPADIGDIIRGRDLYLGNKKKKQNGKETEREKLEQKLKBIFKKIHDNLKDKEAQKRYNGD SFADIGDIIRGRDLYLGNKKKKQNGKETEREKLEQKLKEIFKKLHDNLKDKEAQKRYNGD MATSGGSGGTQDEDAKHVLDEFGQKVHDEVHGEAKNYVSELKGSLSLASILGETAFTVKS MQTESKYTELIEANSKRNPCKKDGKGNDVDRFSVKEQAGYDNKKMKCSNGMTCAPFRRLH LCNKNF PNMNSNDSSKAKHDLLAEVCMAAKYEGESIKTHYPKYDSKYPGSDFPMCTMLAR Conservative UNIPROT:060991; EMBL:AF003473; NID:g2961467; PID:g2961468; PIDN:AAC 99.6%; Score 2268; DI Pred. No. 7.4e 0; Mismatches , , from GB/EMBL/DDBJ .4e-145; DB 2; Length 2228; Indels 0, Gaps 360 300 180 180 120 120 6 240 240 60

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GenCore version 5.1.6 (c) 1993 - 2005 Compugen Ltd.

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## SUMMARIES

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This invention describes a novel Plasmodium falciparum erythrocyte membrane protein (EMP), PfEMP1, which is capable of binding to a carbohydrate which exhibits at least one negatively charged glycosamino-glycan (GAG)-like moiety and has antiaggregational, antiocclusional and antimalarial activity. The carbohydrates of the invention are capable of acting as receptors for malaria antigens present on the surfaces of malaria infected erythrocytes, by binding to these antigens the carbohydrates prevent rosette formation by the blood cells, this prevents occlusion of capillaries as is seen in cerebral malaria caused by plasmodium falciparum. The products of the invention can be used to treat malaria or to vaccinate against it, or used to design a model to identify compounds that bind to PfEMP1. The carbohydrates, polypeptides and

Claim 4; Page 67-74; 80pp; English.

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### ALIGNMENTS

RESULT 1 AAW93944

AAW93944 standard; protein; 2228 AA.

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New isolated malaria polypeptides.
                                                                                                                                                          WPI; 1999-254692/21.
                                                                                                                                                                            Wahlgren M,
                                                                                                                                                                                                                                                                                                                 glycosamino-glycan-like moiety; antiaggregational; antimalarial; antigen receptor; infected erythrocyte; rosette formation; blood cell; capillary occlusion; cerebral malaria; treatment; vaccine; detection;
                                                                                                                                                                                                                19-SEP-1997;
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                                                                                                                                                                                                                                                                                                                                                                  P. falciparum PfEMP1 protein.
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                                                                                                                                                                                                                                                                                           Plasmodium falciparum.
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GENERAL

INFORMATION:

APPLICANT: Sim, Kim L. Chitnis, Chetan Miller, Louis H.

Peterson, David S.

RESULT 1

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COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Ve;
CURRENT APPLICATION DATA;
APPLICATION NUMBER: US/10/153,273
FILING DATE: 21-May-2002
CLASSIFICATION: Unknown>
                                                                  PRIOR APPLICATION DATA:
APPLICATION NUMBER: US/09/210,288
FILING DATE: <Unknown>
                      ATTORNEY/AGENT INFORMATION: NAME: Fuller, Michael
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Su, Xin-znau.
Wellems, Thomas E.
TITLE OF INVENTION: BINDING DOMAINS FROM PLASMODIUM VIVAX
AND PLASMODIUM FALCIPARUM ERYTHROCYTE BINDING PROTEINS
                                                                                                                                                                                                                                                                                                                                                                         ADDRESSEE: Knobbe Martens Olson & Bear STREET: 620 Newport Center Drive 16th Floor CITY: Newport Beach STATE: California COUNTRY: US
REGISTRATION NUMBER: 36,516
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Maximum Match 100%
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US-08-487-8268-31
US-09-210-288-19
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US-08-487-8268-2
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US-08-487-826B-14
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	10828, A	11433, A	6756, Ap	1371, Ap	1131, Ap	10, Appl	914, App	7, Appli	6507, Ap	1262, Ap	5, Appli	5080, Ap	2964, Ap	3159, Ap	1, Appli	•	16, Appl	

RESULT 1 US-08-487-826B-16

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US-08-487-826B-16
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MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Vers
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Vers
OPERATION DATA:

CURRENT APPLICATION DATA:

APPLICATION UMMBER: US/08/487,826B
FILING DATE: 10-SEP-1993
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: Israelsen, Ned
REGISTRATION NUMBER: 09,655
REFERENCE/DOCKET NUMBER: NIH121.001CE
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
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INFORMATION FOR SEQ ID NO: 16:
SEQUENCE CHARACTERISTICS:
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               MOLECULE TYPE: protein
HYPOTHETICAL: NO
ANTI-SENSE: NO
FRAGMENT TYPE: N-terminal
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APPLICANT: 'Su, Xin-zhaun
APPLICANT: Wellems, Thoma
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APPLICANT: Chitnis, Chetan
APPLICANT: Miller, Louis H
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TITLE OF INVENTION:
NUMBER OF SEQUENCES:
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STREET: 62
                                                                                                     LENGTH: 2182 amino ac
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
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ZIP: 92660
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Peterson, David S.
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16th Floor
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Query Match

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      Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
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(without alignments)
4215.459 Million cell updates/sec
    1612378 seqs, 512079187 residues
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             060991 plasmodium Q8ibas plasmodium Q8ibas plasmodium Q8ibw9 plasmodium Q8ibw9 plasmodium Q8ibw9 plasmodium Q8ibw7 plasmodium Q8ibx2 plasmodium Q8ibx2 plasmodium Q8i520 plasmodium Q8i520 plasmodium Q8i520 plasmodium Q8i634 plasmodium Q26034 plasmodium Q26034 plasmodium Q26034 plasmodium Q26034 plasmodium Q8i6142 plasmodium Q8i6142 plasmodium Q8i6142 plasmodium Q8i634 plasmodium Q8i634 plasmodium Q8i634 plasmodium Q8i645 plasmodium Q8i645 plasmodium Q8i640 plasmodium Q8i1263 plasmodium Q8i1263 plasmodium Q8i1270 plasmodiu
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RESULT 1  O60991 PRELIMINARY; PRT; 2228 AA.  O60991 PRELIMINARY; PRT; 2228 AA.  AC C60991  O1 O60991 PRELIMINARY; PRT; 2228 AA.  AC C60991  O1 AUG-1998 (TREMBLrel. 07, Created)  DT 01-AUG-1998 (TREMBLrel. 25, Last sequence update)  DT 01-AUG-1998 (TREMBLrel. 20, Last sequence update)  DE Expthrocyte membrane protein 1.  GN Name-PCR391.2-var1;  OS Plasmodium falciparum M.;  RA Chen Q., Barragan A., Fernandez V., Sundstrom A., Schlichthern.  RA Sahlen A., Carlson J., Datta S., Wahlgren M.,  RA SAhlen A., Carlson J., Datta S., Wahlgren M.,  RA SAhlen A., Carlson J., Datta S., Wahlgren M.,  RA SAHlen A., Carlson J., Datta S., Wahlgren M.,  RA SCHIEN A., PROJATA, AACOST30.1; -  RI 16EBMP1) as the rosetting ligand of the malaria parasite P.  RI 16EBMP1) as the rosetting ligand of the malaria parasite P.  RI 17EBMP1 as the rosetting ligand of the malaria parasite P.  RI 18EBMP1 as the rosetting ligand of the malaria parasite P.  RI 18EBMP1 as the rosetting ligand of the malaria parasite P.  RI 18EBMP1 as the rosetting ligand of the malaria parasite P.  RI 18EBMP1 as the rosetting ligand of the malaria parasite P.  RI 18EBMP1 as the rosetting ligand of the malaria parasite P.  RI 18EBMP1 as the rosetting ligand of the malaria parasite P.  RI 18EBMP1 as the rosetting ligand of the malaria parasite P.  RI 18EBMP1 as the rosetting ligand of the malaria parasite P.  RI 18EBMP1 as the rosetting ligand of the malaria parasite P.  RI 18EBMP1 as the rosetting ligand of the malaria parasite P.  RI 18EBMP1 as the rosetting ligand of the malaria parasit	34 4464, 5 36, 9 2109 2 OBIAS7  35 4418, 5 36, 5 2201 2 OBITOP  36 4418, 5 36, 5 2201 2 OBITOP  37 4418, 5 36, 5 2201 2 OBITOP  38 4418, 5 36, 5 2201 2 OBITOP  38 4418, 5 36, 5 2201 2 OBITOP  38 4418, 5 36, 5 2201 2 OBITOP  39 410, 5 35, 9 2109 2 OBITOP  39 410, 5 35, 6 2209 2 OBITOP  40 4302, 5 35, 3 2209 2 OBITOP  41 4285, 35, 3 2215 2 OBITOP  42 4270, 5 35, 3 2215 2 OBITOP  43 4268, 5 35, 3 2215 2 OBITOP  44 4267, 5 35, 3 2215 2 OBITOP  44 4267, 5 35, 3 2215 2 OBITOP  44 4267, 5 35, 3 2215 2 OBITOP  45 4210 34.8 2120 2 OBITOP  46 4267, 5 35, 3 2215 2 OBITOP  47 4267, 5 35, 3 2215 2 OBITOP  48 4267, 5 35, 3 2215 2 OBITOP  49 4267, 5 35, 3 2215 2 OBITOP  40 4267, 5 35, 3 2215 2 OBITOP  40 4267, 5 35, 3 2215 2 OBITOP  41 4267, 5 35, 3 2215 2 OBITOP  42 4267, 5 35, 3 2215 2 OBITOP  43 4268, 5 35, 3 2215 2 OBITOP  44 4267, 5 35, 3 2215 2 OBITOP  44 4267, 5 35, 3 2215 2 OBITOP  45 4210 34.8 2120 2 OBITOP  46 4267, 5 35, 3 2215 2 OBITOP  47 4267, 5 35, 3 2215 2 OBITOP  48 4267, 5 35, 3 2215 2 OBITOP  48 4267, 5 35, 3 2215 2 OBITOP  49 4267, 5 35, 3 2215 2 OBITOP  40 4267, 5 35, 3 2215 2 OBITOP  41 4267, 5 35, 3 2215 2 OBITOP  42 4270, 5 35, 3 2215 2 OBITOP  43 4268, 5 35, 3 2215 2 OBITOP  44 4267, 5		7
NOULT 1  O0991  O60991; O1-AUG-1: O1-AUG-1: O1-AUG-1: O1-CCT-2 ETYCHTOG NAME-FCTA. Plasmodin ELYCHTOG NAME-FCTA. PLASMODINE: Chen Q., Sahlen A. "Identif: I (PfEMP) Falciparr J. Exp. N  [2] SEQUENCE Chen Q.J Submittee EMBL; AFR PIR; T144 GG; GG: OG GO; OG	34 4464, 5 36.9 2109 2081X7  36 44815 36.5 2212 2081LY7  36 44815 36.5 2212 2081EPOS  36 43415 35.5 2201 2081EPOS  37 4465 35.9 2163 2081EPOS  38 43415 35.9 2163 2081EPOS  41 4285 35.4 2280 2081EPOS  42 4285 35.4 2280 2081EPOS  43 4285 35.4 2280 2081EPOS  44 4285 35.3 2379 2081EPOS  44 4285 35.9 2215 2081EPOS  45 4210 34.8 2120 2081EPOS  46 4221 2081EPOS  47 4285 35.9 2215 2081EPOS  48 4285 35.9 2215 2081EPOS  48 4285 35.9 2215 2081EPOS  49 4285 35.9 2215 2081EPOS  40 4285 2025 2026 2026 2026 2026 2026 2026 202	SPADIGDIIRGRDLYLGNKKKKQNGKETEREKLEQKLKE	S
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GTVDAFLGLLNNEKACKDITDGGKINFK 480	PACGSYENWIDNORKOPDKOKKYTKEIS 420	3EWAEDFCRKKKKLENLEKQCRGKDKSD 360	NSSYFRATCNDTGOGPSQTHNKCRCDKDK 300	KLEOKLKEIFKKIHDNIKDKEAOKRYNGD 240                                KLEOKLKEIFKKIHDNIKDKEAOKRYNGD 240	EGESIKTHYPKYDSKYPGSDFPMCTMLAR 180            EGESIKTHYPKYDSKYPGSDFPMCTMLAR 180	PSVKEQAGYDNKWKCSNGWTCAPFRRLH 120            	GEAKNYVSELKGSLSLASILGETAFTVKS 60 	; DB 2; Length 2228; ; es 5; Indels 0; Gaps 0;	- malaria parasite (Plasmodium falciparum) rane binding protein 1 (EMP1) ion 20-Sep-1999 #text_change 09-Jul-2004 , V.; Sundstrom, A.; Schlichtherle, M.; Sahlen, A.; C um falciparum erythrocyte membrane protein 1 (PfEMP1) 180592; PMID:9419207 rom GB/EMBL/DDBJ EMBL:AF003473; NID:g2961467; PID:g2961468; PIDN:AACO

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CC CARBIA New isolated malaria polypeptides WPI; 1999-254692/21. Wahlgren M, Barragan 19-SEP-1997; 18-SEP-1998; 01-APR-1999. WO9915557-A1. Plasmodium falciparum. medicament; parasite; diagnosis; (KARO-) KAROLINSKA INNOVATIONS 97SE-00003386. 98WO-SE001675 Carlson J, B Qijun ú Fernandez <

Erythrocyte membrane protein; EMP, pfEMP1; malaria; antiocclusional; glycosamino-glycan-like moiety; antiaggregational; antimalarial; antigen receptor; infected erythrocyte; rosette formation; blood cell capillary occlusion; cerebral malaria; treatment; vaccine; detection; capillary occlusion; cerebral malaria; treatment; vaccine; detection;

rosette formation; blood cell;

P. falciparum PfEMP1 protein.

30-JUN-1999 AAW93944;

(first entry)

AAW93944 standard; protein; 2228

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acting as receptors for malaria antigens present on the surfaces of malaria infected erythrocytes, by binding to these antigens the carbohydrates prevent rosette formation by the blood cells, this prevents occlusion of capillaries as is seen in cerebral malaria caused by plasmodium falciparum. The products of the invention can be used to treat malaria or to vaccinate against it, or used to design a model to identify This invention describes a novel plasmodium falciparum erythrocyte membrane protein (BMP), PfEMP1, which is capable of binding to a carbohydrate which exhibits at least one negatively charged glycosamino-glycan (GAG)-like molety and has antiaggregational, antiocclusional and antimalarial activity. The carbohydrates of the invention are capable of compounds that bind to PfEMP1. carbohydrates, and le of

Claim 4; Page 67-74; 80pp; English

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